

REMARKS

The present Amendment and accompanying Request for Continued Examination (RCE) are in response to the Advisory Action mailed on May 16, 2003, and the final Office Action mailed on January 3, 2003. The Applicants previously filed a second Amendment After Final on April 30, 2003. In the Advisory Action mailed on May 16, 2003, however, the Applicants were informed that the Amendment After Final was not entered. That Amendment After Final is therefore withdrawn. Thus, prior to the present Amendment, the claims stand as amended on October 17, 2002.

In the Final Office Action mailed on January 3, 2003, all claims were rejected under 35 U.S.C. § 102(e) and/or under 35 U.S.C. § 103(a). These rejections are respectfully traversed and reconsideration is requested. With the entry of the present Amendment, it is believed that the rejections are overcome and all claims are in condition for allowance.

Claim Amendments

Claims 1, 3-5, 7, 8, 10-13, 15-17, 19 and 20 are amended to further specify that the Applicants' claimed "application program executing on the network cluster" refers to a "user application program executing on the network cluster." By specifying that a user application program is queried for the figure of merit, these claims can be distinguished from the cited references that solely rely on cluster system level software to determine a node's value. Support for this amendment can be found in the application, as originally filed, for example, in the Specification at pg. 2, ll. 15-19; pg. 3, ll. 18-20; pg. 17 and ll. 8-15; and FIG. 2 (distributed application 36). Thus, no new matter is being introduced. Acceptance and entry of the amendments are respectfully requested.

New Claims 21-56 are being added to the application to claim the invention more distinctly. New Claims 21-23 depend from independent Claim 1. New dependent Claim 21 requires the management program to determine whether any user application programs are executing on the member node to query. New dependent Claim 22 requires the management program to query a plurality of application programs for the figure of merit. New dependent

Claim 23 requires that the user application vote on the value of the member node to continuing operation in the partitioned network cluster. Support for these amendments can be found in the application, as originally filed, for example, in the Specification at pg. 3, ll. 9 to 21; pg. 16, ll. 25-28; and pg. 17, ll.-25. Thus, no new matter is being introduced.

New Claims 44-50 are system claims that parallel Claims 1-4 and new Claims 21-23.

New Claims 24-43 and 51-56 require querying a plurality of application programs executing on a member node for the figure of merit. This limitation is similar to that recited in new dependent Claim 22. It is respectfully submitted that the cited references do not discuss querying a plurality of application programs for a node's value. In particular, the references do not suggest that application programs should provide any input about the value of a member node to the cluster manager. By having the cluster manager query a plurality of application programs executing on a member node for the figure of merit, the claims can be distinguished from the cited references, which simply use cluster software alone to determine a node's value. Because the references do not relate to querying a plurality of applications executing on a member node for a node's value, it is believed that these claims are in condition for allowance. Therefore, allowance of Claims 21-41 is respectfully requested.

Claim Rejections

In the present Office Action, Claims 1, 2, 5, 6, 12-14, 17 and 18 were rejected under 35 U.S.C. § 102(e) based on U.S. Patent No. 6,192,401 to Modiri. Claims 3, 4, 15, 16 and 19 were rejected under 35 U.S.C. § 103(a) based on Modiri in view of U.S. Patent No. 5,325,526 to Cameron. Claims 7-9 were rejected under 35 U.S.C. § 103(a) based on Modiri in view of U.S. Patent No. 5,999,712 to Moiin. Claims 10, 11 and 20 were rejected under 35 U.S.C. § 103(a) based on Modiri and Moiin in view of Cameron. Claims 1, 2, 5-9, 12-14, 17, and 18 were under 35 U.S.C. § 103(a) based on Moiin. Claims 3, 4, 10, 11, 15, 16, 19 and 20 were under 35 U.S.C. § 103(a) based on Moiin in view of Cameron. These rejections are traversed and reconsideration is respectfully requested.

In conventional systems that resolve cluster partitions, such as those of Modiri and Moin, cluster software determined a node's value independent of any vote from user application programs executing on the cluster partition.¹ In comparison, as set forth in amended Claims 1, 7, 12, 13, 19 and 20, the invention resolves a cluster partition by, among other things, querying a user application program executing on the network cluster for the value of a member node to the cluster. In this way, criteria such as a number of users and priority of the application can be evaluated when selecting the surviving cluster partition.² None of the cited references recognize or discuss the importance of resolving a cluster partition by enabling "a *user application*, operating on the cluster, to provide input to the cluster manager. . .regarding the use of the node's resources by the applications actually executing on the nodes."³

By contrast with the claimed invention, Modiri teaches to resolve membership issues in partitioned networks by simply relying on the conventional cluster software to determine a node's value to the cluster. This determination is made without receiving any vote or input from a user application about the value of a node from which it is executing upon. Modiri is, therefore, consistent with the cluster manager prior art, and thus, does not suggest that a user application is queried for the figure of their merit as required by Claims 1, 7, 12, 13, 19 and 20. As a result, Modiri does not address the problems solved by the claimed invention, namely, that conventional cluster management software does not take into account any application programs that are executing on a node when determining the surviving cluster partition.

Similarly, Moin teaches that the cluster membership monitor from each node votes on cluster membership decisions and handles any communication and device failures. Notably, Moin does nothing to enable a *user* application program to vote on the value of the nodes they are executing upon. Thus, Moin does not discuss the advantages or limitations of Claims 1, 7, 12, 13, 19 and 20.

¹ See Specification, pg. 3, ll. 12-13.

² See Specification, pg. 3, ll. 13-15.

³ See Specification, pg. 3, ll. 18-21.

With respect to Cameron, this reference is directed to a typical operating system task scheduler that has been modified to concurrently manage the resources of multiple partitions. In particular, Cameron relates to a scheduler and allocator that perform resource allocation and partitioning, which includes creating “partition priorities.” It is submitted that the teachings directed to partitions in Cameron teach away from the claimed invention because the claimed invention is directed to resolving partitioned networked clusters, not creating and enabling them.⁴

Moreover, similar to the Applicants, Modiri, Moiin and Cameron each teach to distinguish between cluster system level software and application programs executing on the network. For example, Modiri discusses that cluster management software and applications have distinctly different meanings and distinctly different roles in a distributed system.⁵ Likewise, in Moiin, “cluster membership monitor” (CMM) software and application programs are discussed in distinctly different contexts.⁶ Also, Cameron specifically distinguishes between applications and system software. For example, Cameron states that:

Application programs (hereinafter applications) comprise processing logic for performing a specific function for a computer user or for the manipulation of a specific type of data. *Applications* are typically **distinguished** from operating system software of which a task scheduler is a part.⁷

⁴ See Cameron, col. 3, ll. 17-20, and Abstract.

⁵ See Modiri, col. 2, ll. 26-27 (describing “cluster management software” which assigns weighting values to nodes), and col. 5, ll. 8-33 (describing *applications* (such as “generic applications,” “data service applications,” and “databases” - which are monitored by the cluster management software for failures/faults)).

⁶ See Moiin, col. 2, ll. 28-31 (describing that the “CMM is responsible for membership, quorum and failure”) and col. 2, ll. 53-55 (describing that “the CMM does not guarantee. . . that the *applications* are present on any given node”).

⁷ See Cameron, col. 1, ll. 20- 25 (Emphasis added).

In light of the fact that the cited references each recognize that there are distinct differences between applications running on the nodes and system level software (such as managers, monitors and schedulers), it is respectfully submitted that one of ordinary skill would understand that the Applicants' claimed *user application program* is directed to a different level of software architecture and does not correspond to the cluster or system level software discussed in Modiri, Mojin, or Cameron.

As none of the references, taken separately or in combination, teach or suggest the claimed "querying, by the cluster management software, a user application program for the figure of merit" and "returning, from the user application program, the figure of merit to the cluster management software" of Applicants' Claims 1, 7, 12, 13, 19 and 20, it is submitted that these claims are allowable.

Claims 2-6 and depend from independent Claim 1; Claims 8-11 depend from Claim 7; and Claims 14-18 depend from Claim 13. Since independent Claims 1, 7 and 13 have been shown above to be in condition for allowance, their respective dependent claims should also be allowed.

Reconsideration of the rejections of Claims 1-20 under 35 U.S.C. § 102 and 35 U.S.C. § 103 is respectfully requested.

Information Disclosure Statement

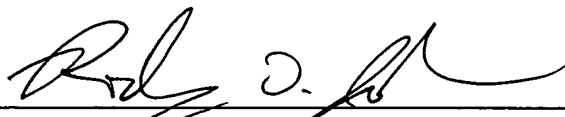
An Information Disclosure Statement (IDS) is being filed concurrently herewith. Entry of the IDS is respectfully requested.

CONCLUSION

In view of the above amendments and remarks, it is believed that all claims are in condition for allowance, and it is respectfully requested that the application be passed to issue. If the Examiner feels that a telephone conference would expedite prosecution of this case, the Examiner is invited to call the undersigned attorney.

Respectfully submitted,

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